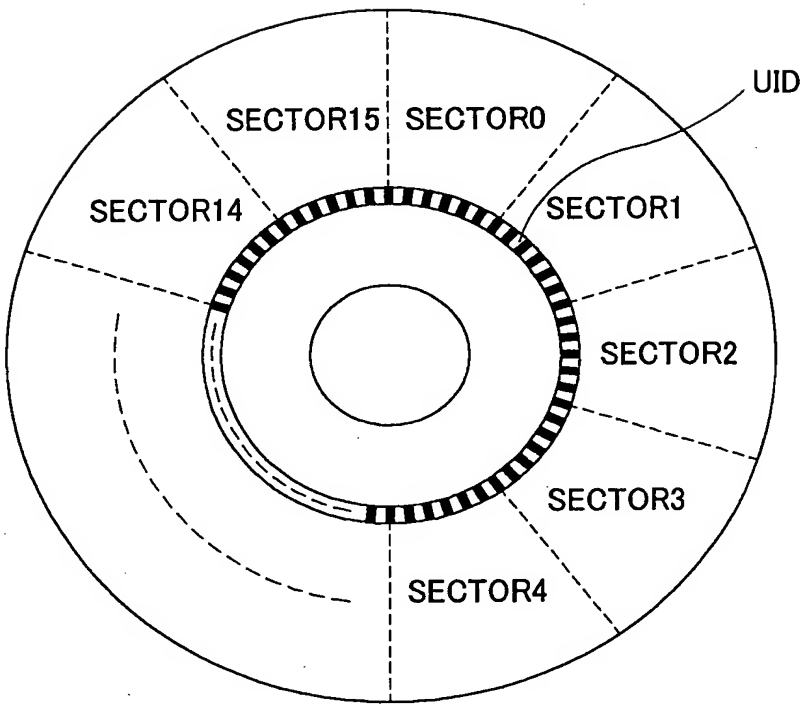
200



Best Available Copy

FIG. 1

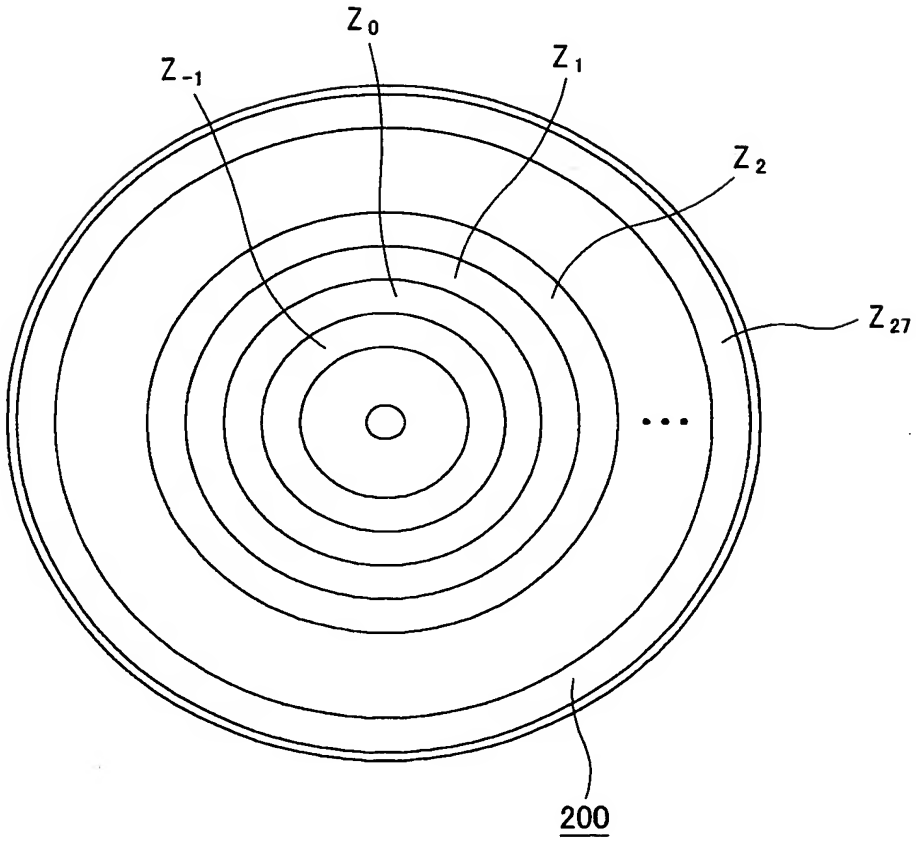


FIG.2

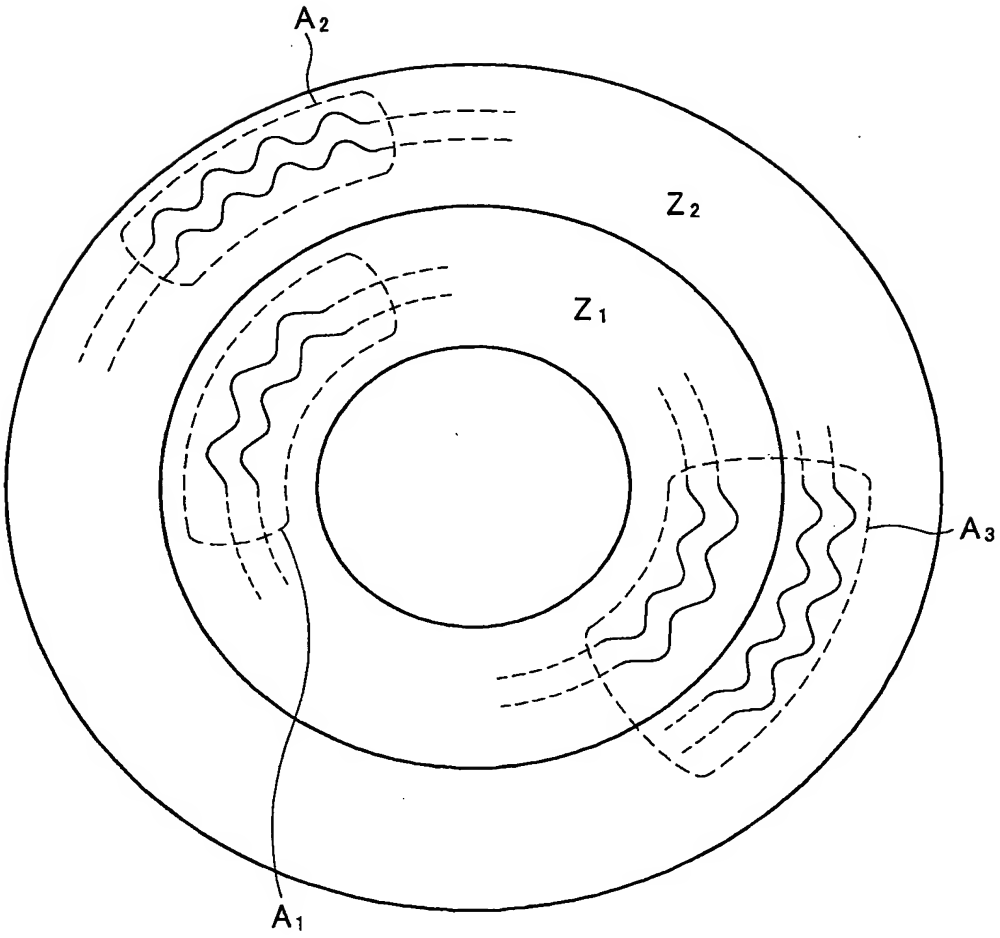


FIG.3

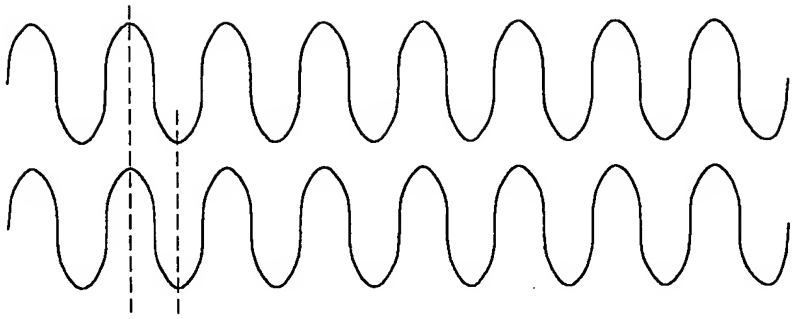


FIG. 4

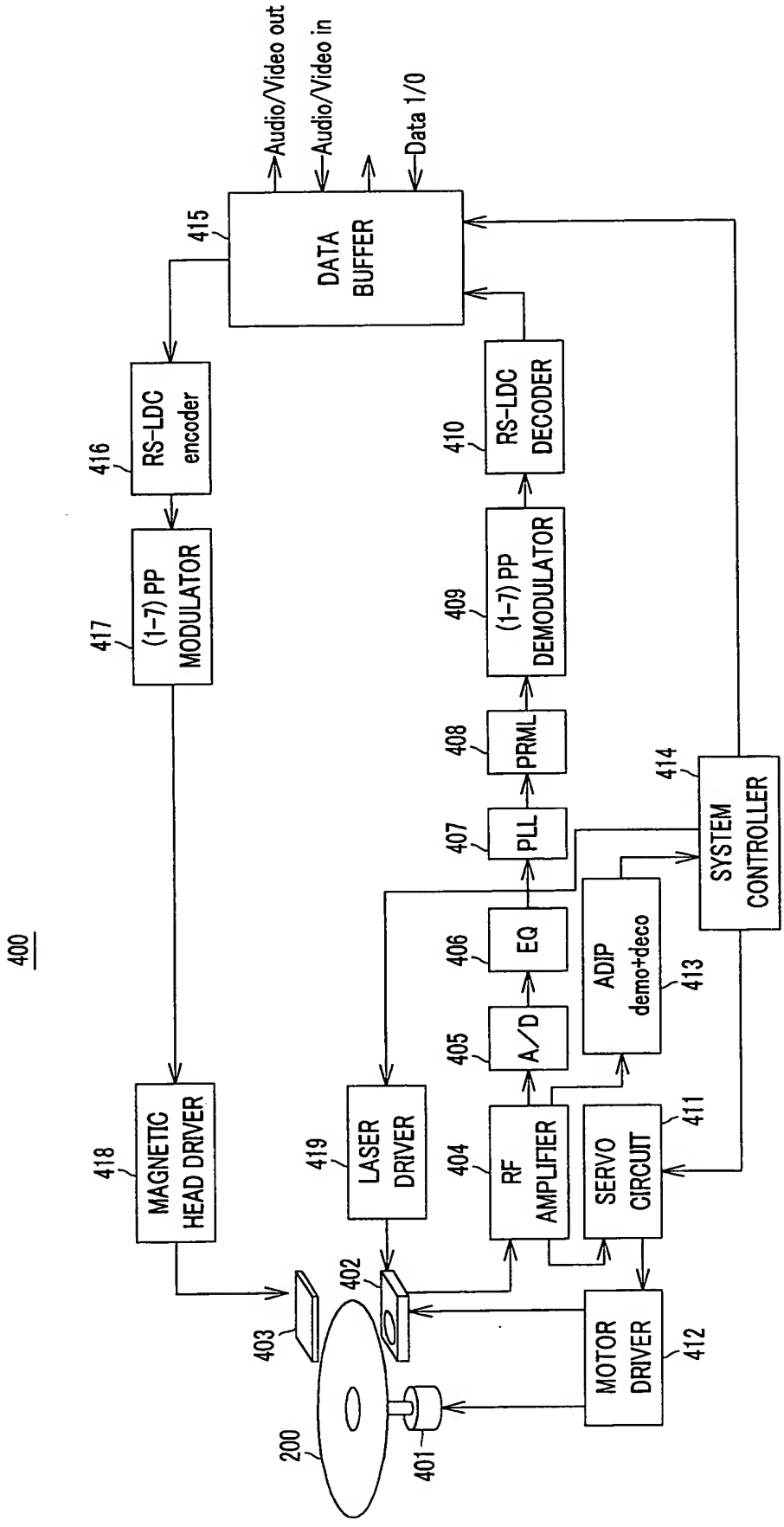

400
Audio/Video out
Audio/Video in
Data I/O
415
DATA BUFFER
416
RS-LDC encoder
417
(1-7) PP MODULATOR
418
MAGNETIC HEAD DRIVER
419
LASER DRIVER
404
RF AMPLIFIER
405
A/D
406
EQ
407
PLL
408
PRML
409
(1-7) PP DEMODULATOR
410
RS-LDC DECODER
411
SERVO CIRCUIT
412
MOTOR DRIVER
413
ADIP demo+deco
414
SYSTEM CONTROLLER
200
401
402
403

FIG.5

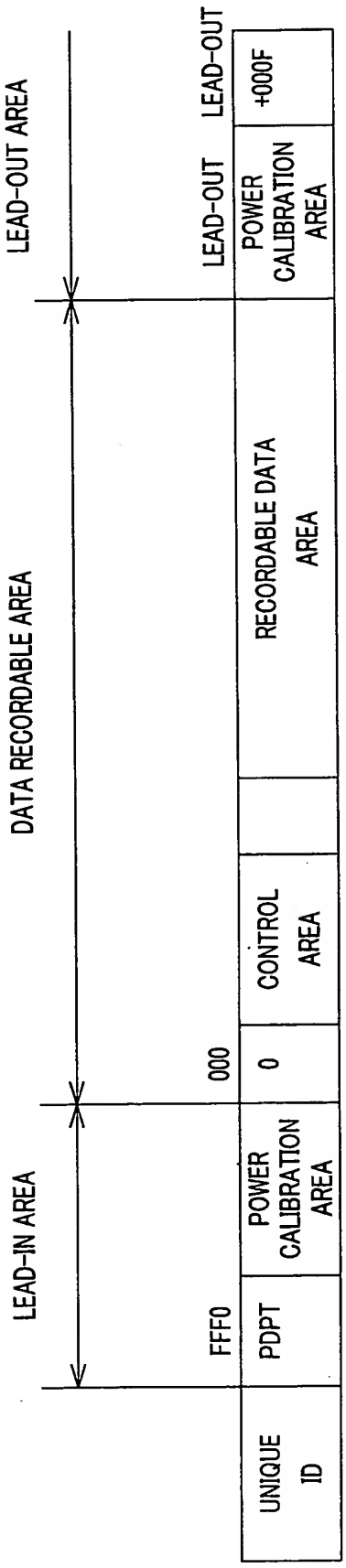

LEAD-OUT AREA
DATA RECORDABLE AREA
LEAD-IN AREA
LEAD-OUT
LEAD-OUT
+000F
POWER CALIBRATION AREA
RECORDABLE DATA AREA
000
CONTROL AREA
0
FFF0
POWER CALIBRATION AREA
PDPT
UNIQUE ID

FIG.6

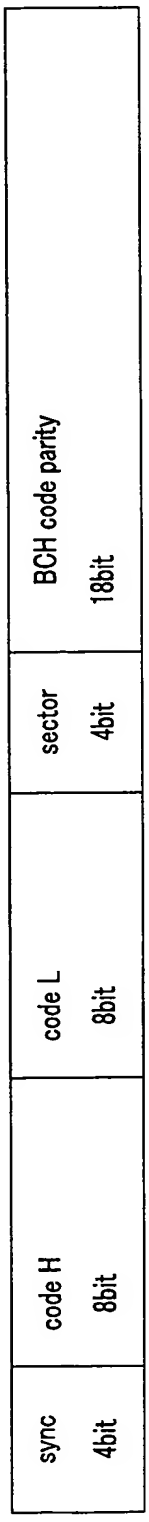

sync
4bit
code H
8bit
code L
8bit
sector
4bit
BCH code parity
18bit

FIG.7

reproducing direction →

header 1	header 2	header 3	header 4
CTD 1	CTD 2	CTD 3	unique ID1
unique ID2	unique ID3	unique ID4	unique ID5
unique ID6	unique ID7	unique ID8	unique ID9
unique ID10	unique ID11	unique ID12	unique ID13
unique ID14	unique ID15	unique ID16	EDC 1
ECC 1	ECC 2	ECC 3	ECC 4
ECC 5	ECC 6	ECC 7	ECC 8

FIG.8

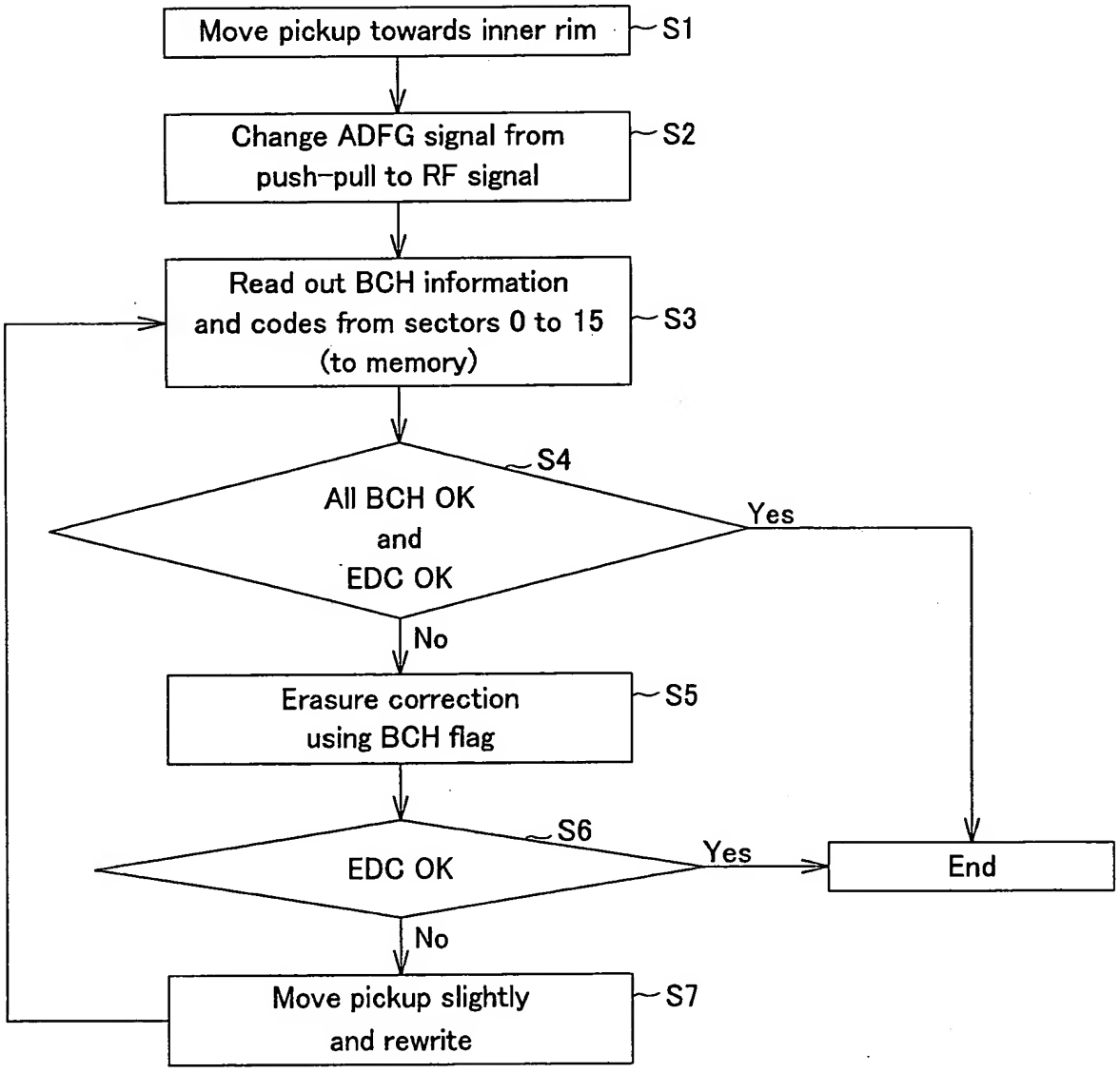

Move pickup towards inner rim
S1
Change ADFG signal from push-pull to RF signal
S2
Read out BCH information and codes from sectors 0 to 15 (to memory)
S3
S4
All BCH OK and EDC OK
Yes
No
Erasure correction using BCH flag
S5
S6
EDC OK
Yes
End
No
Move pickup slightly and rewrite
S7

FIG.9

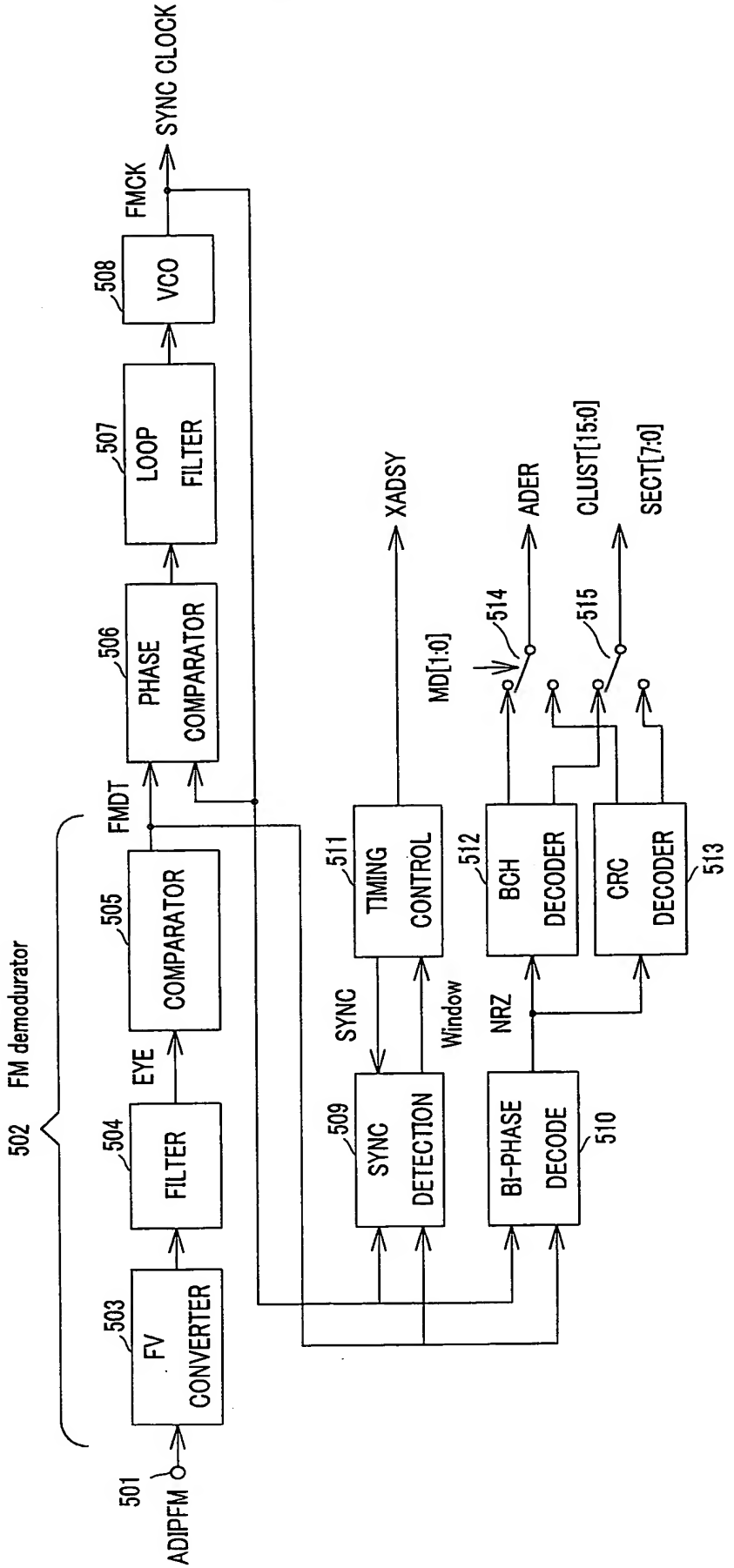

ADIPFM
501
502 FM demodurator
503 FV CONVERTER
504 FILTER
505 COMPARATOR
506 PHASE COMPARATOR
507 LOOP FILTER
508 VCO
509 SYNC DETECTION
510 BI-PHASE DECODE
511 TIMING CONTROL
512 BCH DECODER
513 CRC DECODER
514
515
EYE
FMDT
FMCK
SYNC CLOCK
SYNC
Window
NRZ
MD[1:0]
XADSY
ADER
CLUST[15:0]
SECT[7:0]

FIG.10

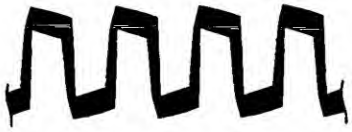


FIG. 11A

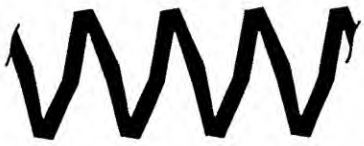


FIG. 11B

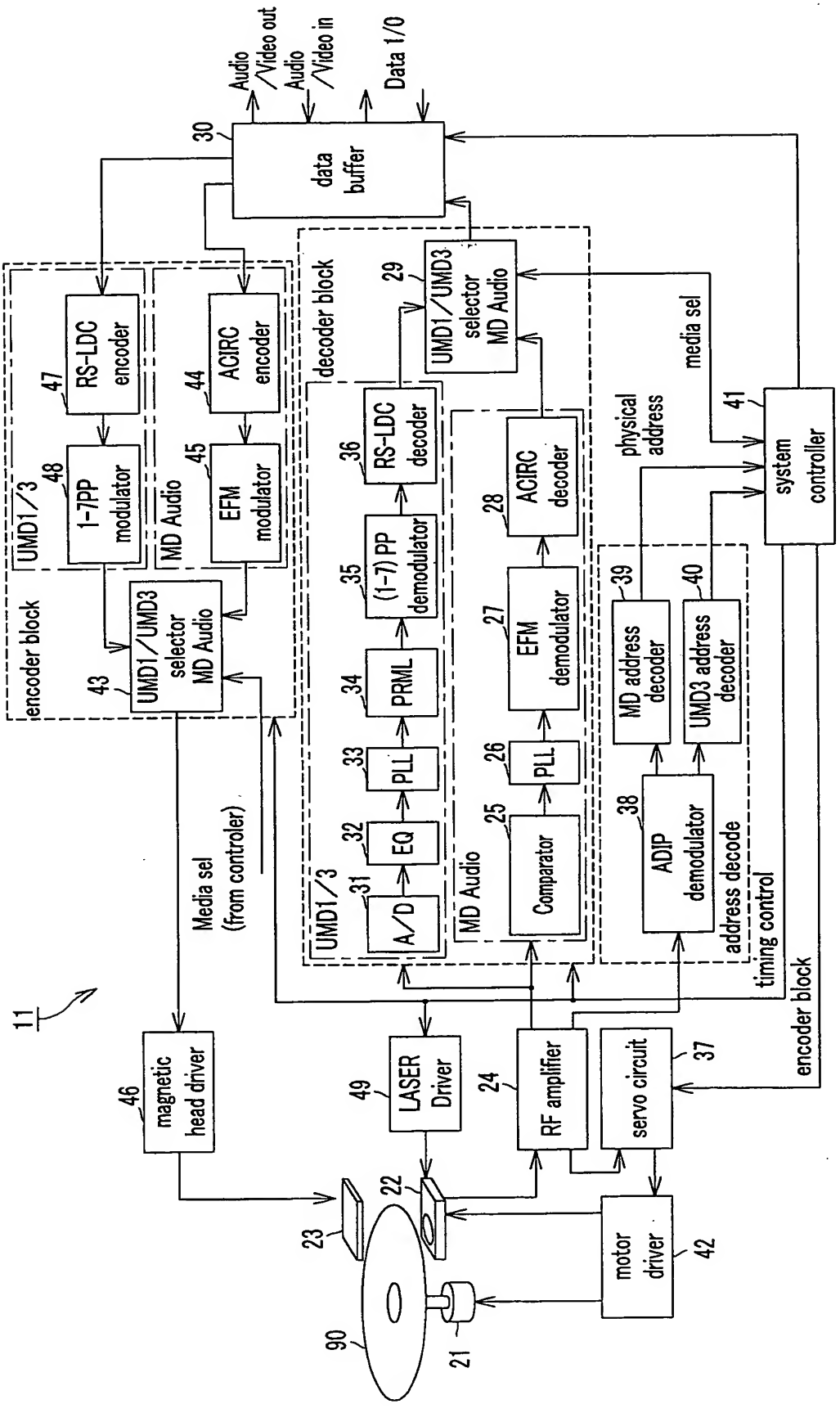

Audio /Video out
Audio /Video in
Data I/O
30
data buffer
encoder block
UMD1/3
47
RS-LDC encoder
48
1-7PP modulator
MD Audio
44
ACIRC encoder
45
EFM modulator
43
UMD1/UMD3 selector MD Audio
decoder block
29
UMD1/UMD3 selector MD Audio
36
RS-LDC decoder
35
(1-7) PP demodulator
34
PRML
33
PLL
32
EQ
31
A/D
UMD1/3
MD Audio
28
ACIRC decoder
27
EFM demodulator
26
PLL
25
Comparator
media sel
physical address
41
system controller
39
MD address decoder
40
UMD3 address decoder
38
ADIP demodulator
address decode
timing control
encoder block
Media sel (from controler)
11
46
magnetic head driver
49
LASER Driver
24
RF amplifier
servo circuit
37
22
23
motor driver
42
90
21

FIG.12

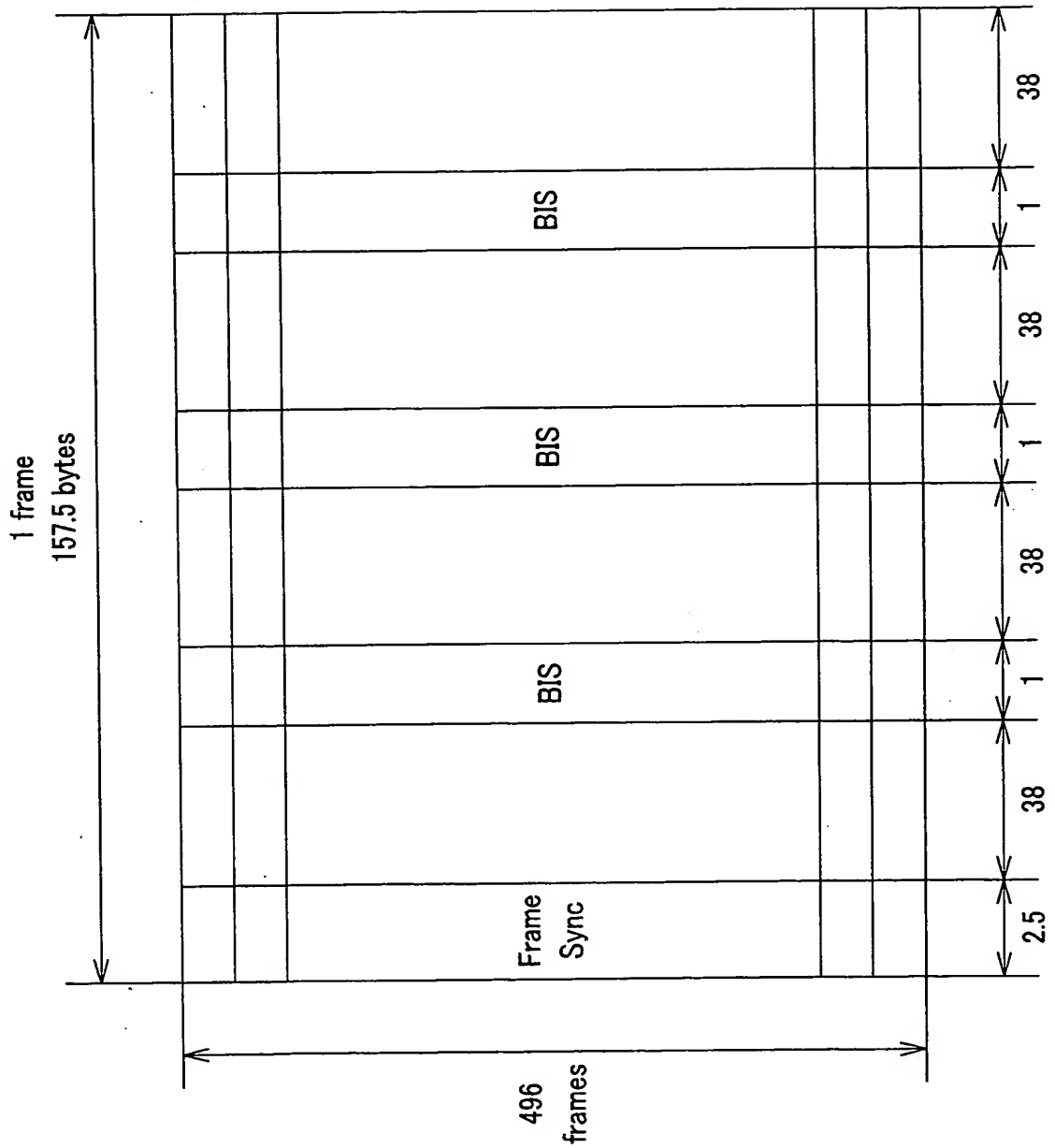

1 frame
157.5 bytes
Frame Sync
BIS
BIS
BIS
2.5
38
1
38
1
38
1
38
496 frames

FIG.13

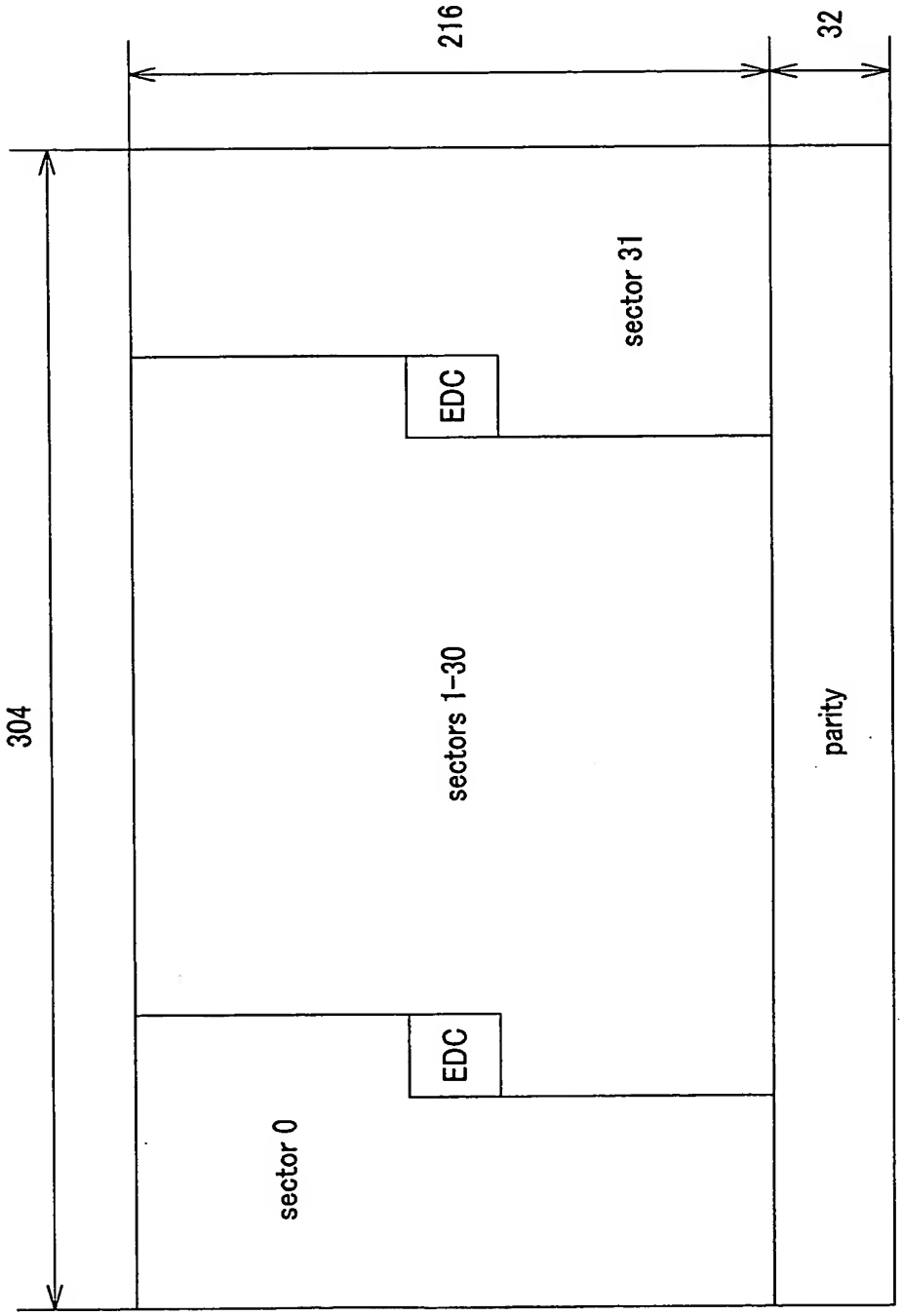


FIG.14

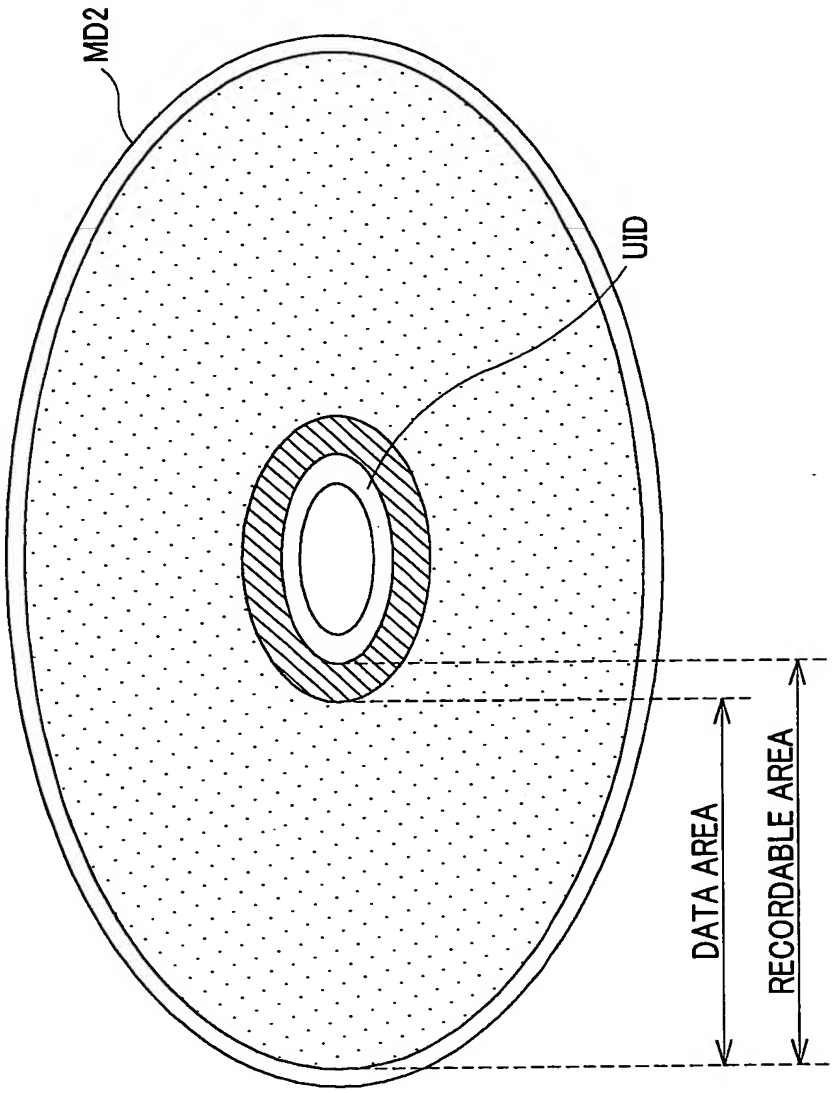


FIG.15

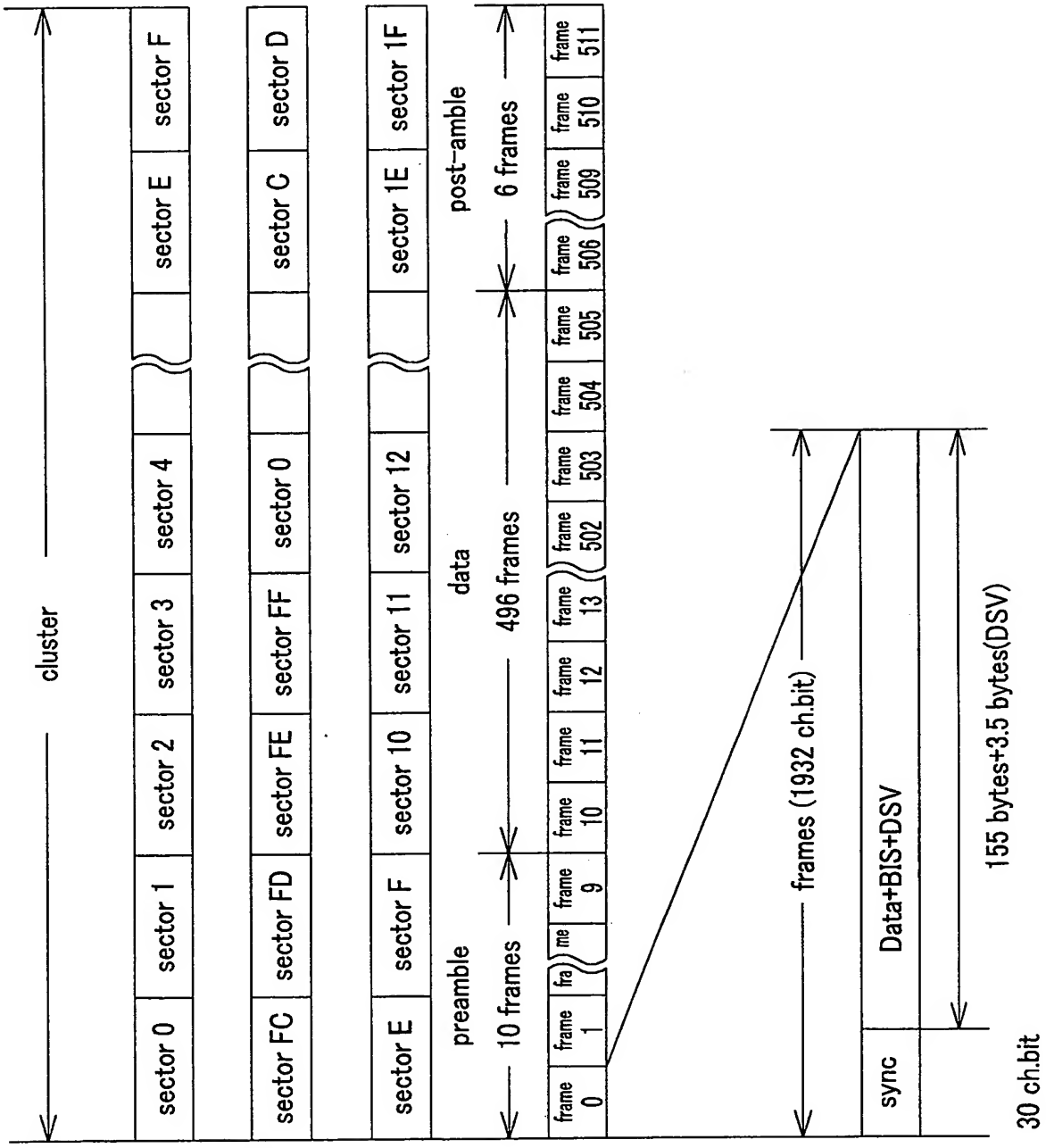

UMD3
former half cluster of UMD1
latter half cluster of UMD1
cluster
sector 0
sector 1
sector 2
sector 3
sector 4
sector E
sector F
sector FC
sector FD
sector FE
sector FF
sector 0
sector C
sector D
sector E
sector F
sector 10
sector 11
sector 12
sector 1E
sector 1F
preamble
data
post-amble
10 frames
496 frames
6 frames
frame 0
frame 1
frame 9
frame 10
frame 11
frame 12
frame 13
frame 502
frame 503
frame 504
frame 505
frame 506
frame 509
frame 510
frame 511
frames (1932 ch.bit)
sync
Data+BIS+DSV
155 bytes+3.5 bytes(DSV)
30 ch.bit

FIG.16

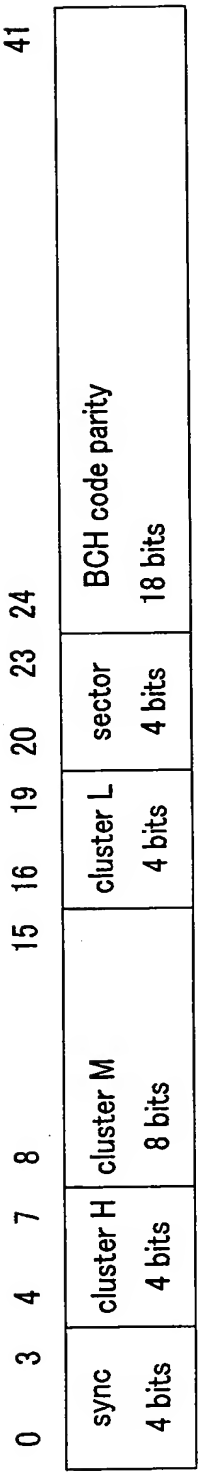


FIG.17A

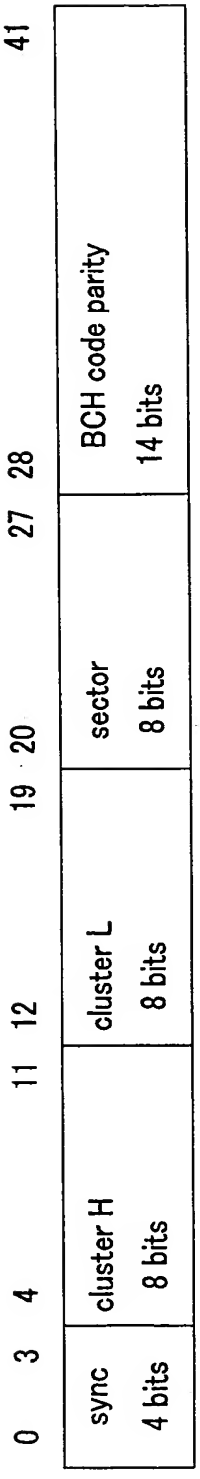


FIG.17B

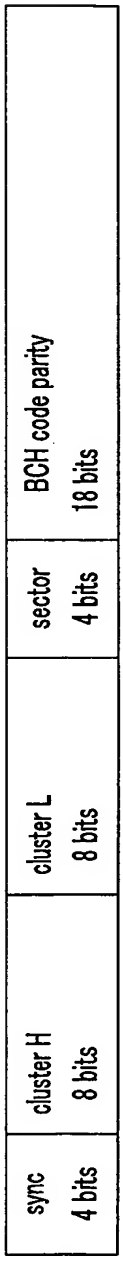

sync
4 bits
cluster H
8 bits
cluster L
8 bits
sector
4 bits
BCH code parity
18 bits

FIG.18

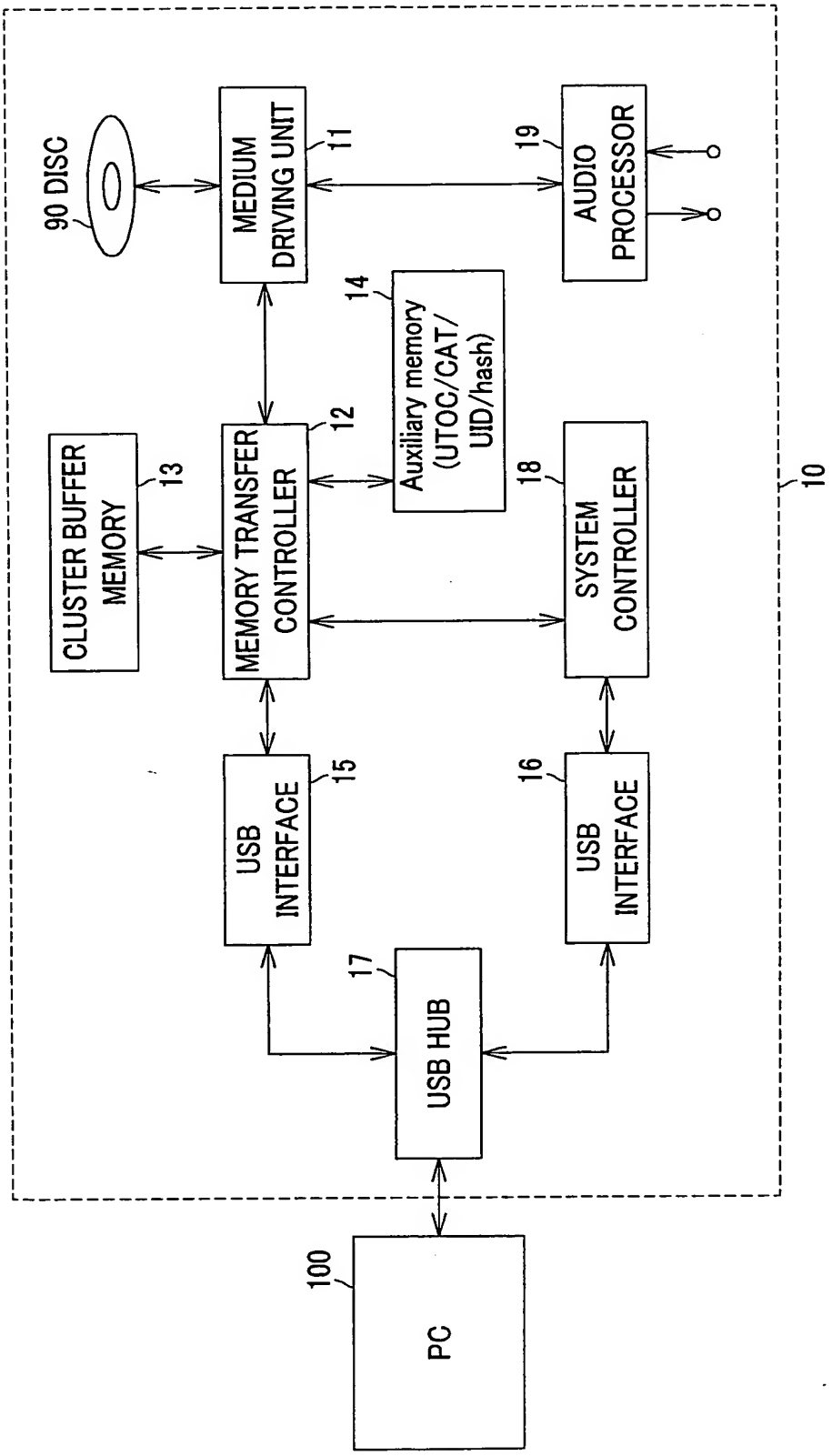

90 DISC
MEDIUM DRIVING UNIT
11
AUDIO PROCESSOR
19
14
Auxiliary memory (UTOC/CAT/ UID/hash)
CLUSTER BUFFER MEMORY
13
MEMORY TRANSFER CONTROLLER
12
18
SYSTEM CONTROLLER
10
USB INTERFACE
15
16
USB INTERFACE
17
USB HUB
100
PC

FIG.19

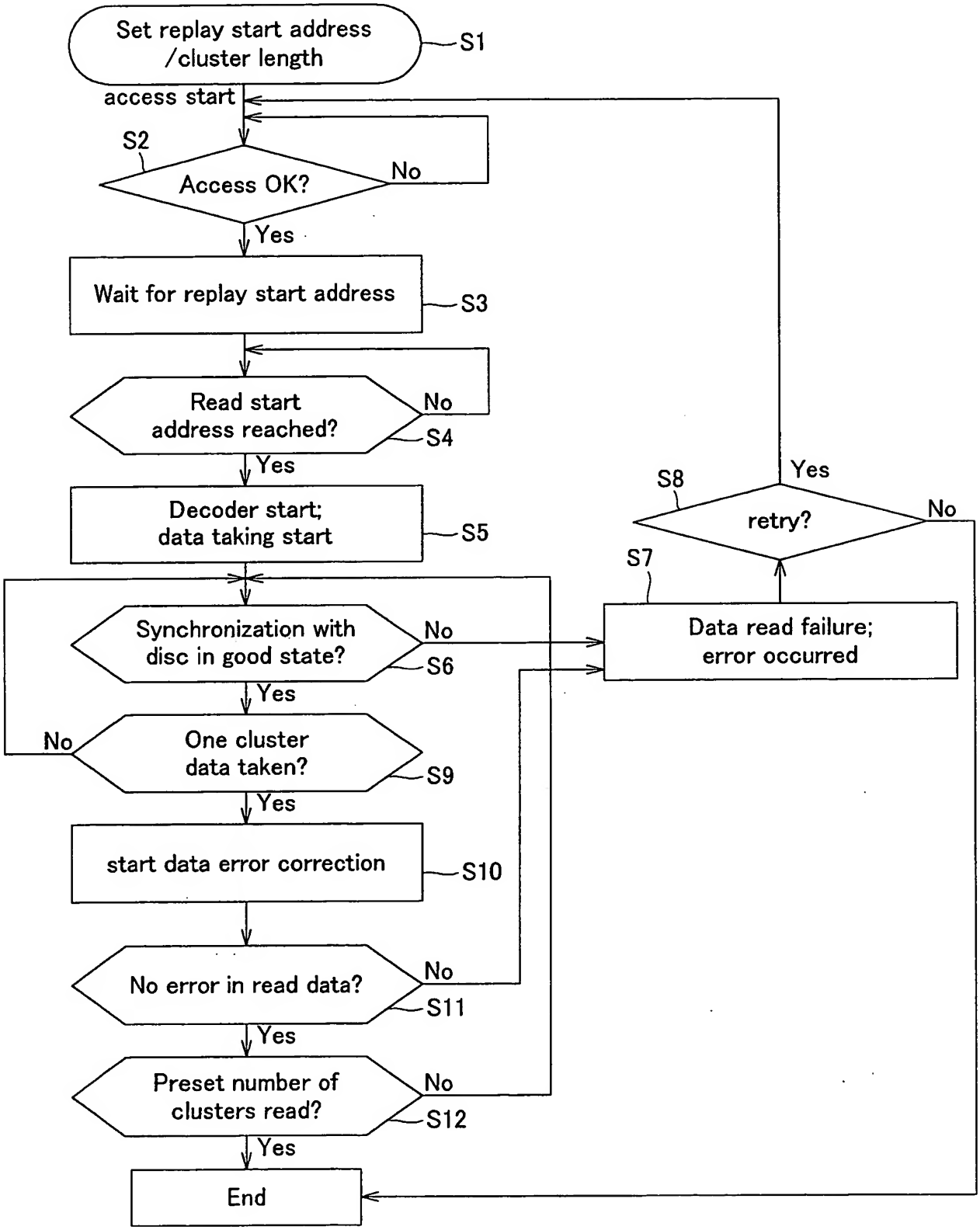

Set replay start address /cluster length
S1
access start
S2
Access OK?
No
Yes
Wait for replay start address
S3
Read start address reached?
No
S4
Yes
Decoder start; data taking start
S5
Synchronization with disc in good state?
No
S6
Yes
No
One cluster data taken?
S9
Yes
start data error correction
S10
No error in read data?
No
S11
Yes
Preset number of clusters read?
No
S12
Yes
End
S8
retry?
Yes
No
S7
Data read failure; error occurred

FIG. 20

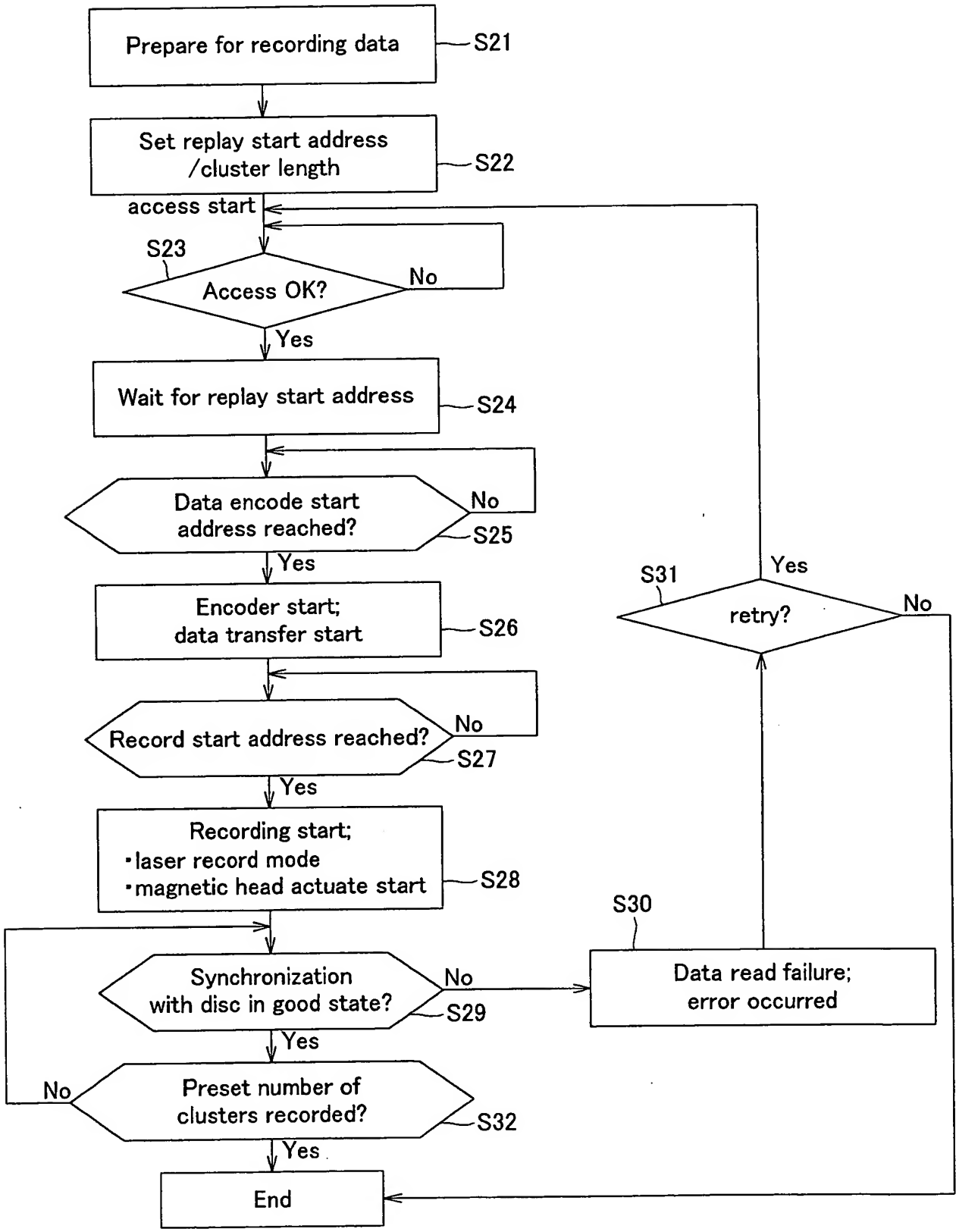

Prepare for recording data
S21
Set replay start address /cluster length
S22
access start
S23
Access OK?
No
Yes
Wait for replay start address
S24
Data encode start address reached?
No
S25
Yes
Encoder start; data transfer start
S26
Record start address reached?
No
S27
Yes
Recording start;
•laser record mode
•magnetic head actuate start
S28
Synchronization with disc in good state?
No
S29
Yes
Preset number of clusters recorded?
No
S32
Yes
End
S30
Data read failure; error occurred
S31
retry?
Yes
No

FIG.21

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